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**MATHEMATICS** ~~2021~~

**DO NOT WRITE YOUR SCHOOL/CENTRE NAME OR NUMBER ANYWHERE IN THIS BOOKLET**

# MARKING GUIDE

Signature

Signature ..... 2023 Random No. 1111  
Subject ..... Paper-eode 2023

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Subject ..... Paper-eode 2023

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Subject ..... Paper-eode 2023

**Personal Number**

**READ THE INSTRUCTIONS BELOW  
CAREFULLY BEFORE USING  
THE ANSWER BOOKLET.**

1. Confirm that this answer booklet has 8 pages. Do not accept an answer booklet with missing pages.
  2. Do not fold, dismantle, tear and/or mishandle any part of the answer booklet. Folding, dismantling, tearing and/or any other form of mishandling of the answer booklet is a malpractice and shall lead to cancellation of results. All work must be handed in.
  3. Use a blue or black ink ball pen. Work in pencil, other than graphs, maps and drawings, will not be marked.
  4. Answer only the number of questions as instructed on the question paper. Answers to extra questions will not be marked.
  5. Write your answers on both sides of each sheet.
  6. Do your rough work in this answer booklet. Cross through any work you do not want marked.
  7. Do not share your work with another candidate or expose your work such that another candidate can copy from it. Sharing or exposing your work shall lead to cancellation of results.
  8. List the question numbers in the order attempted, in the left-hand column of the boxes opposite. Do not list the multiple choice questions.
  9. Check that you have written your name, signature, random number and personal number on each page of the answer booklet(s) used. Tie all the booklets used together.

Write the number of answer booklets you have used here.  →

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QN	TOPIC	L	CLASS	SOLUTION	ANSWER	COMMENTS
1	OPN	K	P-2	(i) $63 + 54 = 117$ ✓ (ii) $63 + 54 = 117$ ✓ (iii) $60 + 3$ $50 + 4$ $110 + 7$ $117$ ✓ (B2)		B2 FOR 117
				(iv)		
				$  \begin{array}{r}  6 \ 3 \\  + 5 \ 4 \\  \hline  1 \ 1 \ 7  \end{array}  $ ✓ (B2)		
						Accept
						$63 + 54 = 117$
						printed script
						$63 + 54 = 117$
						$  \begin{array}{r}  63 \\  + 54 \\  \hline  117  \end{array}  $ ✓ (B2)
						Reject
						Re Written
						$63 + 54 = 117$



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QN	TOPIC	L	CLASS	SOLUTION				COMMENTS
				T	H	T	O	
2	WNO	K	P-3					
				0	8	0	0	
				1	2	0	1	82 for 1201 or 1201 ten.

3	SET CONS'	C	P5	R = {a, b, c, d} S = {a, f, p, c, s} RUS = {a, b, c, d, f, p, s}	B1	For identifying members of RUS correctly.
				$n(RUS) = 7$	B1	For $n(RUS) = 7$

(iii)

$n(RUS) = 7$	$n(RUS) = 7$
Accept	Accept
$n(RUS) = \{a, b, c, d, f, p, s\} = 7$	$n(RUS) = \{a, b, c, d, f, p, s\} = 7$
Accept	Accept
(i) Seven members	(i) Seven members
(ii) 7 elements	(ii) 7 elements

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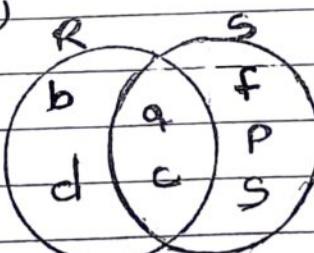
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QN	TOPIC	CLASS	SOLUTION	COMMENTS	
				TH	H
2	WNO K	P-3	$\begin{array}{cccc} & & & \\ \text{O} & \text{O} & \text{O} & \text{O} \\ \hline 1 & 2 & 0 & 1 \end{array}$		B2 for 1201 or 1201 ten.

3	SET C CONS:	$P \cup R = \{a, b, c, d\}$ $S = \{a, f, p, c, s\}$ $R \cup S = \{a, b, c, d, f, p, s\}$ BI $n(R \cup S) = 7$ ✓		for identifying members of RUS correctly.	
				BI	BI

$n(R \cup S) = 7$ ✓ BI <u>Accept</u> $n(R \cup S) = \{a, b, c, d, f, p, s\} = 7$ ✓ BI	$n(R \cup S) = 7$ ✓ BI <u>Accept</u> $n(R \cup S) = 7$ BI BI	$n(R \cup S) = 7$ BI BI <u>Accept</u> $n(R \cup S) = \{a, b, c, d, f, p, s\}$ $n(R \cup S) = 7$ BI BI
<u>Accept</u> (i) Seven members (ii) 7 elements		
		$n(R \cup S) = 7$ BI BI <u>Accept</u> $n(R \cup S) = \{a, b, c, d, f, p, s\}$ $n(R \cup S) = 7$ BI BI
		$n(R \cup S) = 7$ BI BI <u>Accept</u> $n(R \cup S) = \{a, b, c, d, f, p, s\}$ $n(R \cup S) = 7$ BI BI



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ON	TOPIC	L	CLASS	SOLUTION	AWARD	COMMENTS
4	INTEGER	C	P-5	(i) $\frac{1}{4}, \frac{1}{3}, -\frac{1}{2}, \frac{1}{1}, 0, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}$ $\rightarrow$ B1 for correct working.		
				Ascending order		
				-3, -1, 0, 4 ✓	B1	For correct order.
			(ii)	-3, -1, 0, 4 ✓ (B1) (B1)		Accept
					(B1) $\frac{5}{-3, -2, -1, 0, 1, 2, 3, 4} \rightarrow$	B1
						(B1)
					(B1) $\frac{-3, -2, -1, 0, 1, 2, 3}{-3, -2, -1, 0, 1, 2, 3, 4} \rightarrow$	B1
						80
					(C) $\frac{-3, -2, -1, 0, 1, 2, 3}{-3, -2, -1, 0, 1, 2, 3, 4} \rightarrow$	80
						80
					(D) $\frac{-3, -1, 0, 4}{-3, -2, -1, 0, 1, 2, 3, 4} \rightarrow$	B1 B1
						Condone the curly brackets.
5	INTEGER	C	P-7	(iii) M T W T F S S 1 2 3 4 5 ✓ 6 7 8 9 10 11 12 ✓ 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 (30)	M1	For correct working.
				Thursday	A1	For Thursday.
						

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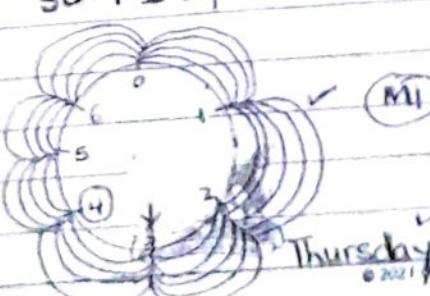
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ON TOPIC L	CASE	SOLUTION	ANSWER	COMMENTS
		(iii) 3 rep. Wednesday $3+30= \text{---} \quad (\text{finite } 7) \checkmark$ (M1) $3+29= \text{---} \quad (\text{finite } 7)$ $\frac{32}{7}= 4 \text{ rem. } 4$		
		4 rep. Thursday $\checkmark$ (A1)		
		(iv) 2 rep. Tuesday $2+30= \text{---} \quad (\text{finite } 7) \checkmark$ (M1) $\frac{32}{7}= 4 \text{ rem. } 4$		
		4 rep. Thursday $\checkmark$ (A1)		
		(v) 3 rep. Wednesday $3+30= \text{---} \quad (\text{finite } 7) \checkmark$ (M1) $3+29= \text{---} \quad (\text{finite } 7)$ $\frac{29}{7}= 4 \text{ rem. } 1$ $3+1= \underline{\text{---}} \quad \text{finite } 7$		
		4 rep. Thursday $\checkmark$ (A1)		
		(vi) $\frac{30}{7}= 4 \text{ rem. } 2$ wed Thur $\frac{2}{2} \checkmark$ (M1)		
		Thursday $\checkmark$ (A1)		
		(vii) $30-1=29$		
		 Thursday $\checkmark$ (A1)		

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Qn TOPIC L Cuts

## SOLUTION

AWARD

## COMMENTS

$$(VII) \quad 3 \overline{) 30} = \text{(finite 7)}$$

$$\frac{33}{7} = 4 \text{ rem } 5$$

$$5 \overline{) 1} = 4 \text{ (finite 7)} \quad (M1)$$

4 rep. Thursday ✓ A1

$$(VIII) \quad 30 \overline{) 1} = 29 \quad (M1)$$

$$\frac{29}{7} = 4 \text{ rem } 1$$

$$3 \overline{) 1} = 4 \text{ (finite 7)}$$

4 rep. Thursday ✓ A1

(IX)

$$\begin{array}{ccccccccccccccccccccccccccccc} & \\ 0 & 1 & 2 & 3 & 4 & 5 & 6 & 0 & 1 & 2 & 3 & 4 & 5 & 6 & 0 & 1 & 2 & 3 & 4 & 5 & 6 & 0 & 1 & 2 & 3 & 4 & 5 & 6 & 0 & 1 & 2 & 3 & 4 & 5 & 6 & 0 & 1 & \end{array}$$

$$6 \text{ LMC C P.5 } \overset{(i)}{=} 1000 \text{ ml} = 1 \text{ litre}$$

$$1 \text{ ml} = \frac{1}{1000} \text{ Litre.}$$

$$750 \text{ ml} = \frac{1}{1000} \times 750 \text{ L} \quad \checkmark$$

$$= \frac{75}{100} \text{ L}$$

$$= 0.75 \text{ L} \quad \checkmark$$

M1 For correct working

A1 For 0.75L or  $\frac{75}{100}$

or  $\frac{3}{4}$  L or  $\frac{15}{20}$  L

(ii) KL HL DL L DL ml

0 . 7 5 0

$$750 \text{ ml} \equiv 0.75 \text{ litres}$$

$\frac{750}{1000} \text{ L}$  M1 A1



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Qn	TOPIC	L	CLASS	SOLUTION	AWARD	COMMENT
7	OPNL C	P-7	(i)	$4^2 + 3^2 \times 9^0$ $(4 \times 4) + (3 \times 3) \times 1$ $16 + (9 \times 1) \checkmark$ $16 + 9$ $\underline{25} \checkmark$	M1	For Simplifying powers
			(ii)	$4^2 + 3^2 \times 9^0$ $16 + 9 \times 1 \checkmark$ (M1) $\underline{25} \checkmark$ (A1)	A1	For 25
						Reject
						$4^2 + 3^2 \times 9^0$ $16 + 9$ M1 $25$ A1
8	TIME C	P-7	(i)	$1:20$ $+ 12 \text{ } 00\text{h}$ $\underline{13 \text{ } 20 \text{ h}}$		
				$13 \text{ } 20$ $- 2 \text{ } 15$ $\underline{11:05 \text{ am or } 11:05 \text{ h}} \checkmark$	M1	For subtraction
			(ii)	$1:20 \text{ pm}$ $+ 12 \text{ } 00\text{h}$ $\underline{13 \text{ } 20 \text{ h}}$	A1	For 11:05 am or 11:05 hrs
				$13 \text{ } 20$ $- 2 \text{ } 15$ $\underline{11 \text{ } 05 \text{ h}} \checkmark$	(M1)	Accept 11:05
			(iii)	Local Language  $7:20$ $- 2:15$ $\underline{5:05}$ $11:05 \checkmark$	(A1)	Reject 11:05 pm

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Qn	TOPIC	L	CLASS	SOLUTION	AWARD	COMMENT
7	OPN C	P.7		$\begin{aligned} & (4 \times 4)^2 + 3^2 \times 9^0 \\ & (4 \times 4) + (3 \times 3) \times 1 \\ & 16 + (9 \times 1) \checkmark \\ & 16 + 9 \\ & \underline{25} \checkmark \end{aligned}$	M1	for simplifying powers
		(ii)		$\begin{aligned} & 4^2 + 3^2 \times 9^0 \\ & 16 + 9 \times 1 \checkmark \quad (\text{M1}) \\ & \underline{25} \checkmark \quad (\text{A1}) \end{aligned}$	A1	for 25
						<u>Reject</u>
						$4^2 + 3^2 \times 9^0$ $\underline{16 + 9} \text{ M0}$ $\underline{25} \text{ A0}$
8	TIME C	P.7		$\begin{aligned} & (i) \quad 1:20 \\ & + 12 \text{ oo h} \\ & \underline{13:20 \text{ h}} \end{aligned}$		
				$\begin{aligned} & - 13:20 \\ & - 2:15 \\ & \underline{11:05 \text{ am or } 11:05 \text{ h.}} \checkmark \end{aligned}$	M1	for subtraction
		(ii)		$\begin{aligned} & 1:20 \text{ pm} \\ & + 12 \text{ oo h} \\ & \underline{13:20 \text{ h}} \end{aligned}$	A1	for 11:05 am or 11:05 hrs
						<u>Accept</u>
						11:05
						<u>Reject</u>
						11:05 pm
		(iii)	Local Language	$\begin{aligned} & 7:20 \\ & - 2:15 \\ & \underline{5:05} \checkmark \end{aligned}$	(M1)	
					(A1)	
						
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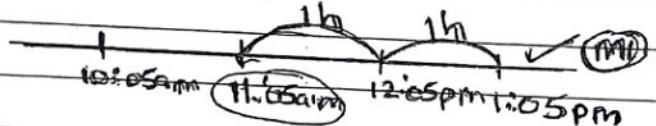
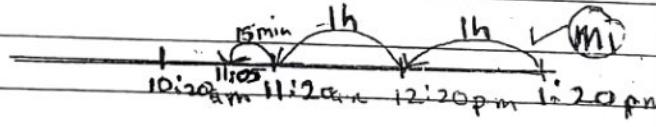
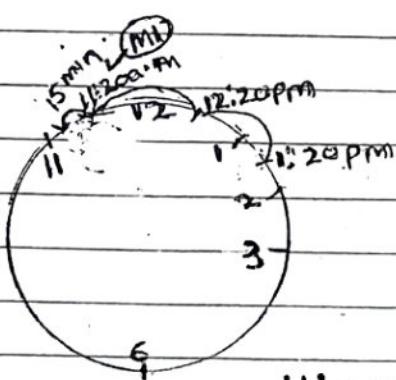
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Qn	TOPIC	L	CLASS	SOLUTION	WATAD	COMMER
	(iv)			E.T - minutes for duration		
				$  \begin{array}{r}  \text{1 : } 20 \text{ pm} \\  - 15 \\  \hline  1 \quad 05  \end{array}  $ subtraction of minutes		
				Subtraction of 2 hours		
	(v)			 $  \begin{array}{r}  10:05 \text{ am} \\  - 1 \text{ h} \\  \hline  11:05 \text{ am}  \end{array}  $ $  \begin{array}{r}  10:05 \text{ am} \\  - 15 \text{ min} \\  \hline  11:05 \text{ am}  \end{array}  $		
				$  \begin{array}{r}  11:05 \text{ am} \\  \checkmark \text{ (A1)}  \end{array}  $		
	(vi)			 $  \begin{array}{r}  10:20 \text{ am} \\  - 1 \text{ h} \\  \hline  11:20 \text{ am}  \end{array}  $ $  \begin{array}{r}  10:20 \text{ am} \\  - 15 \text{ min} \\  \hline  11:20 \text{ am}  \end{array}  $		
				$  \begin{array}{r}  11:20 \\  - 15 \\  \hline  11:05 \text{ am} \\  \checkmark \text{ (A1)}  \end{array}  $		
	(vii)			 $  \begin{array}{r}  11:20 \text{ pm} \\  - 1 \text{ h} \\  \hline  12:20 \text{ pm}  \end{array}  $ $  \begin{array}{r}  11:20 \text{ pm} \\  - 15 \text{ min} \\  \hline  12:20 \text{ pm}  \end{array}  $		
				$  \begin{array}{r}  12:20 \text{ pm} \\  - 15 \\  \hline  11:05 \text{ am}  \end{array}  \checkmark \text{ (A1)}  $		



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Q/N	TOPIC	L	CLASS	SOLUTION	MARKS	COMMENT									
9	ALGEBRA DATA	C	P.7	(i) $P \leq 3$  $\leftarrow * * * + 2 3 4 \rightarrow$ $P = \{3, 2, 1, 0, -1, \dots\} \checkmark$	B2	For the correct solution set with at least two elements in the correct direction.									
				(ii) $\leftarrow * * * + 2 3 4 \rightarrow$ $P = \{\dots -1, 0, 1, 2, 3\} \checkmark \quad (B2)$											
				(iii) $P = \{3, 2, 1, 0, -1, -2, \dots\} \quad (B2)$											
10	Patterns and seq.	C	P.7	(i) 1, 8, 27, 64, 125 $1^3 \times 1^3$ $2^3 \times 2^3$ $3^3 \times 3^3$ $4^3 \times 4^3$ $5^3 \times 5^3$ $\checkmark$ (ii) 1, 8, 27, 64, 125 $\checkmark \quad (B1)$ $1^3$ $2^3$ $3^3$ $4^3$ $5^3 \quad (B1)$ (iii) 1, 8, 27, 64, 125 $\checkmark \quad (B1) \quad (B1)$ (Cube numbers)	B1 B1	For the correct pattern For 125									
				(iv) 1, 8, 27, 64, 125 $\checkmark \quad B1 \quad B1 \text{ (row-1)}$											
11	W. Nos	C	P.7	(i) Base NO <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>3</td><td>14</td><td>R</td></tr> <tr><td>3</td><td>4</td><td>2</td></tr> <tr><td></td><td>1</td><td>1</td></tr> </table> $= 112 \checkmark$ three	3	14	R	3	4	2		1	1	M1	For Correct working
3	14	R													
3	4	2													
	1	1													
					A1	For 112 three									

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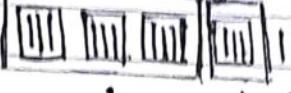
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Qn	TOPIC	L	CLASS	SOLUTION			Mark	Comments	
				Base	No	Remainder			
				(ii)	Base 3	14	2 ✓ (M1)		
					3	4	1		
						1			
							= 112 three (A1)		
				(iii)					
					$14 \div 3 = 4 \text{ r } 2$				
					$4 \div 3 = 1 \text{ r } 1$		✓ (M1)		
				(iv)					
					$14_{\text{ten}} = 112_{\text{three}}$				
							✓ (A1)		
				(v)	B	N	R		
					3	14	2		
					3	4	1	✓ (M1)	
					3	1	1		
					0		↑		
							= 112 ✓ three (A1)		
12	Data Handling	C	P6		2 mangoes cost sh. 2000 ✓			M1 For Correct Working	
					3 oranges cost sh. 1500			A1 For sh. 3500 Accept 3500	
								Reject Wrong Units	

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Qn	TOPIC	L	CLASS	SOLUTION	AWARD	COMMENT
13	Patterns and seq.	C	P.T	$\begin{array}{l} \text{W.M. } 9, 18, 27, 36 \dots \\ 7+8+t = 18 \checkmark \\ 15+t = 18 \\ 15-15+t = 18-15 \\ t = 3 \checkmark \end{array}$	M1	For correct working.
				$\begin{array}{l} \text{(ii) } 7+8+t = 9 \checkmark \quad (\text{M1}) \\ t+15 = 9 \\ t+1+5 = 9 \\ t+6 = 9 \\ t+6-6 = 9-6 \\ t = 3 \checkmark \quad (\text{A1}) \end{array}$	A1	for 3
				$\begin{array}{l} \text{(iii) } 7+8+0 = 15 \\ 7+8+1 = 16 \\ 7+8+2 = 17 \\ 7+8+[3] \checkmark = 18 \quad \text{M1 A1} \\ 7+8+4 = 19 \\ t = 3 \end{array}$		
				$\begin{array}{l} \text{(iv) } 7+8+t = 18 \\ 7+8+t \checkmark \quad (\text{M1}) \\ t = 1 \\ t = 3 \quad (\text{A1}) \end{array}$		$\begin{array}{r} 09 \\ 18 \\ 27 \\ 36 \\ 45 \\ 54 \\ 63 \\ \hline 72 \\ 81 \\ 90 \end{array}$



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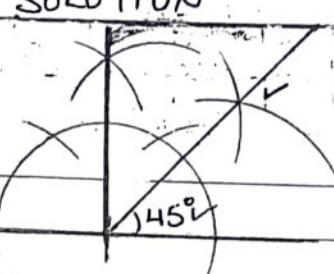
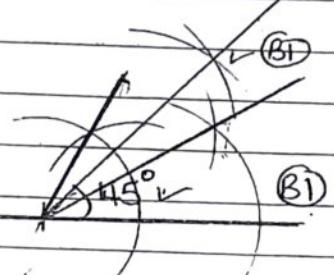
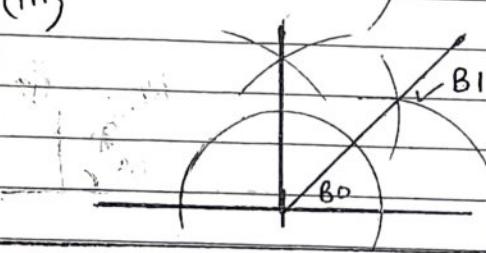
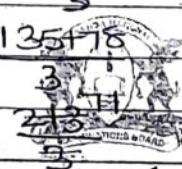
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Qn	TOPIC	L	CLASS	SOLUTION	MARKS	COMMENT
14	LNGT A	P.6	(i)		B1	For the arcs leading to 115°
			(ii)		B1	For identifying 45°
			(iii)		B1	
15	Alg. C	P.6	$5q - 2r - 3q - r$	$5q - 3q - 2r - r$	M1	For collection of like terms
				$2q - 3r$	A1	For $2q - 3r$ or $-3r + 2q$
16	Data C	P.5	Average = <u>Sum of items</u> <u>No. of items</u>	$= \frac{62 + 73 + 78}{3}$	M1	For correct working
			Handt.	$= \frac{213}{3}$		
						
				$= 71$	Accept 71	
				$= 71$	A1	For 71 eggs



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Ques. No. 1. (a) Solutions

Given Converge

19.  $\angle AOC = 60^\circ$

$$25.2 \times 5 = 38 \text{ cm } \checkmark$$

M1 for correct  
Substitution

~~$$\frac{44}{2} + 8 = 22 \text{ cm}$$~~

Ans.

Ans.  $= 22 \text{ cm}$

(b)  $\angle AOC = 144^\circ$  M1 for 144 cm  
for angle 144

$$25.6 = 88 \text{ cm}$$

$$25.6 = 88 \text{ cm}$$

Ans.  $= 88 \text{ cm}$

Ans.

Ans.  $= \frac{144}{2}$

Ans.  $= 72^\circ$

Ans.  $= 0^\circ$

Ans.  $= \frac{144}{2}$

Ans.  $= 144^\circ$

Ans.  $= 144^\circ$



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Qn	Topic	L	Cla	SOLUTION	Award	Comment
19	Line	C	P.6	(i) $2\pi r = C$ $\frac{2 \times 22}{7} \times r = 88 \text{ cm } \checkmark$ $\frac{44}{7} r = 88 \text{ cm}$ $\frac{7}{1} \times \frac{44}{7} r = 88 \text{ cm} \times 7$ $\frac{1}{1} \frac{44}{44} r = \frac{2}{7} 88 \text{ cm} \times 7$ $r = 14 \text{ cm } \checkmark$	A1	For correct substitution
				(ii) $\pi D = C$ $\frac{22}{7} \times D = 88 \text{ cm}$ $\frac{22}{7} D = 88 \text{ cm}$ $\frac{7}{1} \times \frac{22}{7} D = 88 \text{ cm} \times 7$ $\frac{1}{1} \frac{22}{22} D = \frac{4}{22} 88 \text{ cm} \times 7$ $D = 28 \checkmark$	A1	For 14 cm Accept 14
				$2r = D$ $2r = 28$ $\frac{2r}{2} = \frac{28}{2}$ $r = 14 \text{ cm } \checkmark$	(B1)	For 28
					(B1)	For 14



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IN	TOPIC	L	CLASS	SOLUTION	ANSWER	COMMENT														
20	Fraction	C	P-6	(ii)																
				<table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>5</td><td>25</td><td>20</td></tr> <tr><td>5</td><td>5</td><td>4</td></tr> <tr><td>2</td><td>1</td><td>4</td></tr> <tr><td>2</td><td>1</td><td>2</td></tr> <tr><td></td><td>1</td><td>1</td></tr> </table> $5 \times 5 \times 2 \times 2 = 100$	5	25	20	5	5	4	2	1	4	2	1	2		1	1	
5	25	20																		
5	5	4																		
2	1	4																		
2	1	2																		
	1	1																		
				$\frac{20}{25} \times \frac{4}{100} = 80\%$	B1	For either 80 or 90, 80% or 90%, 8 or 9, or 80 or 90 from correct working														
				$\frac{18}{20} \times \frac{4}{100} = 90\%$	B1	For second test when both are correct.														
				<u>The second test</u> ✓																
				(iii) $\frac{20}{25} \times \frac{4}{100} = 80\%$	(B1)															
				$\frac{18}{20} \times \frac{5}{100} = 90\%$	(B1)															
				<u>The second test</u> ✓ (B1)																
				(iv) $\frac{20}{25} \times \frac{4}{100} = 80\%$	(B1)															
				$\frac{18}{20} \times \frac{5}{100} = 90\%$	(B1)															
				<u>The second test</u> ✓ (B1)																



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Qn	Topic	L	CLASS	SOLUTION	AWARD	COMMENT
2(a)	Frac	C	P-6	$\frac{1}{2} - \frac{1}{4} \div \frac{4}{5}$ $= \frac{1}{2} - \left( \frac{1}{4} \div \frac{4}{5} \right) \checkmark$ $= \frac{1}{2} - \left( \frac{1}{4} \times \frac{5}{4} \right) \checkmark$ $= \frac{1}{2} - \frac{5}{16}$ $= \frac{(8 \times 1) - (1 \times 5)}{16} \checkmark$ $= \frac{8 - 5}{16} \checkmark$ $= \frac{3}{16} \checkmark$	M1	For recipr.
b				$\text{i) } 0.27 \times 1.2 \div 0.9$ $= \frac{27}{100} \times \frac{12}{10} \div \frac{9}{10} \checkmark$ $= \frac{27}{100} \times \frac{12}{10} \times \frac{10}{9}$ $= \frac{36}{100}$ $= \underline{\underline{0.36}} \checkmark$	A1	For $\frac{3}{16}$
				$\text{ii) } \frac{0.27 \times 1.2 \times 1000}{0.9 \times 1000} \checkmark \text{ (M1)}$ $= \frac{27 \times 12}{900}$ $= \frac{36}{100}$ $= \underline{\underline{0.36}}$	A1	For 0.36 Accept <u>36</u> 100



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Qn	TOPIC	L	CLASS	SOLUTION	AWARD	COMMENT
21(a)	Frac	C	P-6	$\frac{1}{2} - \frac{1}{4} \div \frac{4}{5}$ $= \frac{1}{2} - \left( \frac{1}{4} \div \frac{4}{5} \right)$ $= \frac{1}{2} - \left( \frac{1}{4} \times \frac{5}{4} \right) \checkmark$ $= \frac{1}{2} - \frac{5}{16}$ $= \frac{(8 \times 1) - (1 \times 5)}{16} \checkmark$ $= \frac{8 - 5}{16} \checkmark$ $= \frac{3}{16} \checkmark$	M1	For recipr.
b				$\text{i) } 0.27 \times 1.2 \div 0.9$ $= \frac{27}{100} \times \frac{12}{10} \div \frac{9}{10} \checkmark$ $= \frac{27}{100} \times \frac{12}{10} \times \frac{10}{9}$ $= \frac{36}{100}$ $= \underline{\underline{0.36}} \checkmark$ $\text{ii) } \frac{0.27 \times 1.2 \times 1000}{0.9 \times 1000} \checkmark \text{ M1}$ $= \frac{27 \times 12}{900}$ $= \frac{36}{100}$ $= \underline{\underline{0.36}} \checkmark \text{ A1}$	M1 M1 A1	For Correc. working. For 0.36 Accept <u>36</u> / <u>100</u>



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TOPIC	L	CASS	SOLUTION	AWARD	COMMENT
			<p>(iii)</p> $\begin{array}{r} 0.3 \\ \times 1.2 \\ \hline 0.9 \end{array}$ $= 0.3 \times 1.2$ $= \frac{3}{10} \times \frac{12}{10}$ $= \frac{\sqrt{36}}{100}$ $= \underline{0.36} \checkmark \text{ (A1)}$	✓ (M1)	
			<p>(iv)</p> $\begin{array}{r} 0.27 \\ \times 1.2 \\ \hline 054 \\ + 021 \\ \hline 0.324 \end{array}$ $0.324 \div 0.9$ $\begin{array}{r} 324 \div 9 \\ 100 \quad \checkmark \text{ (M1)} \end{array}$ $\begin{array}{r} 36 \\ 324 \times 10 \\ 1000 \end{array}$ $= \frac{36}{100}$ $= 0.36 \checkmark \text{ (A1)}$		



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On TOPIC L CLASSSOLUTION

$$22 \text{ DST C P'6} \quad \text{(i) } \frac{\text{Distance}}{1m} = \frac{1}{1000} \text{ Km}$$

$$400m = \left( \frac{1}{1000} \times 400 \right) \text{ Km}$$

$$= \frac{4}{10} \text{ Km} \checkmark$$

Time

$$1 \text{ hour} = 3600 \text{ sec.}$$

$$48 \text{ sec.} = \frac{48}{3600} \text{ hours} \checkmark$$

$$\text{Speed} = D \div T$$

$$= \frac{4}{10} \text{ Km} \div \frac{48}{3600} \text{ h} \checkmark$$

$$= \frac{4}{10} \times \frac{3600}{48}$$

$$= 30 \text{ km/h} \checkmark$$

B1 For  $\frac{400}{1000}$  or  $\frac{1}{120}$  $\frac{25}{3000}, \frac{25}{1000}$ B1 For  $\frac{48}{3600}$  h or  $\frac{1}{3600}$  $\frac{3}{3600}$ 

M1 for division

A1 For 30 km/h

$$\text{(ii) Speed} = \frac{D}{T}$$

$$= \frac{25}{48 \text{ sec}}$$

$$= \frac{25}{3} \text{ m/sec}$$

Distance

$$1m = \frac{1}{1000} \text{ Km}$$

$$\frac{25}{3} \text{ m} = \left( \frac{25}{3} \times \frac{1}{1000} \right) \text{ Km}$$

$$= \frac{25}{3000} \text{ Km}$$

$$= \frac{25}{3000} \text{ Km}$$

$$= \frac{25}{3000} \text{ Km}$$

$$\text{Speed} = \frac{1}{120} \text{ Km} \div \frac{1}{3600} \text{ h}$$

$$= \frac{1}{120} \times \frac{3600}{1} \text{ h}$$

$$= 30 \text{ km/h} \checkmark \text{ A1}$$

$$\text{Time: } 1 \text{ sec} = \frac{1}{3600} \text{ h} \checkmark \text{ B1}$$

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Qn	TOPIC	L	CLASS	SOLUTION	AWARD	COMMENTS
				(iii) $\text{speed} = \frac{\frac{25}{3}}{\frac{48}{3}}$		
				$= \frac{25}{48} \text{ m/sec.}$		
				<u>Distance.</u>		
				$1\text{m} = \frac{1}{1000} \text{ km}$		
				$25\text{m} = \frac{25}{1000} \text{ Km}$ ✓ (B1)		
				<u>Time</u>		
				$1\text{sec} = \frac{1}{3600} \text{ h}$		
				$3\text{ sec} = 3 \times \frac{1}{3600}$		
				$= \left(\frac{3}{3600}\right) \text{ h}$ ✓ (B1)		
				<u>Speed</u>		
				$\frac{25}{1000} \div \frac{3}{3600}$ ✓ (M1)		
				$= \frac{25}{1000} \times \frac{3600}{3}$		
				$= 30 \text{ km/h}$ ✓ (A1)		
				(IV) $1\text{ hour} = 3600 \text{ sec.}$		
				$1\text{km} = 1000 \text{ m.}$		
				$4000 \text{ m.} \div \frac{1000}{3600}$ ✓ (B1)		
				$= 4 \times \frac{3600}{1000}$ ✓ (M1)		
				$= 14.4$		
				$= 30 \text{ km/h}$ ✓ (A1)		
						

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Qn	TOPIC	L	C	CLASS	SOLUTION	AWARD	COMMENT																
24	P.H.	C	P.5	(i)	<p>and seq:</p> <table border="1"> <tr><td>2</td><td>126</td><td>90</td><td>72</td></tr> <tr><td>3</td><td>63</td><td>45</td><td>36</td></tr> <tr><td>3</td><td>21</td><td>15</td><td>12</td></tr> <tr><td></td><td>7</td><td>5</td><td>4</td></tr> </table> <p><math>2 \times 3 \times 3 \checkmark</math></p> <p><u>18 pupils</u> ✓</p>	2	126	90	72	3	63	45	36	3	21	15	12		7	5	4		
2	126	90	72																				
3	63	45	36																				
3	21	15	12																				
	7	5	4																				
				(ii)	<p>126</p> <pre>       +---+                   2   63                   3   21                   3   7     </pre> <p><math>F_{126} = \{2^1, 3^1, 7^1\}</math></p>	M1	For identification of common factors																
						A1	For 18																
					<p>90</p> <pre>       +---+                   2   45                   3   15                   3   5     </pre> <p><math>F_{90} = \{2^1, 3^1, 5^1\}</math></p>																		
					<p>72</p> <pre>       +---+                   2   36                   2   18                   2   9                   3   3     </pre> <p><math>F_{72} = \{2^3, 3^2, 3^1\}</math></p>																		
					<p><math>2 \times 3 \times 3 \checkmark</math></p> <p><u>= 18 pupils</u></p>	(M1)																	

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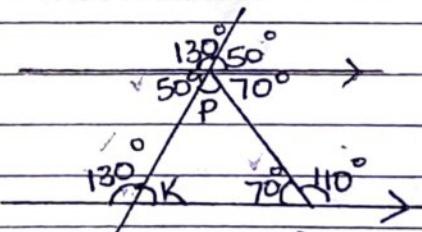
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QN	TOPIC	L	CLASS	SOLUTION	AWARD	COMMENT
				(iii) $F_{126} = \{1, 2, 3, 6, 7, 9, 14, 18, 21, 42, 63, 126\}$		
				$F_{90} = \{1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, 90\}$	M1 M1	
				$F_{72} = \{1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72\}$	A1	Arrow-1 For missing more than two factors on each ( $F_{126}, F_{90}, F_{72}$ )
				OR Common Factors = $\{1, 2, 3, 6, 9, 18\}$ (M1)		
				GCF is 18		
				The largest number of pupils is $\underline{18} \checkmark$ (A1)		
24(b)				$  \begin{array}{r}  42 + 47 \\  \hline  126 \\  \hline  18 \\  \hline  6 \\  \hline  2  \end{array}  \checkmark  $ $= 7 \text{ groups } \checkmark$	M1	For correct Working
25	G.C.C P.O.T			 (i) $P + 70^\circ = 130^\circ \checkmark$ $P + 70^\circ - 70^\circ = 130^\circ - 70^\circ$ $P = 60^\circ \checkmark$	M1	For the formation of correct equation
				(ii) $P + 50^\circ + 10^\circ = 180^\circ \checkmark$ (M1) $P + 120^\circ - 120^\circ = 180^\circ - 120^\circ$ $P = 60^\circ \checkmark$ (A1)	A1	For 60°

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TOPIC	CLASS	SOLUTION	AWARD	COMMENT
		(iii) $P + 70^\circ + 50^\circ + 50^\circ + 130^\circ = 360^\circ \checkmark \text{ (M1)}$ $P + 300^\circ = 360^\circ$ $P + 300^\circ - 300^\circ = 360^\circ - 300^\circ$ $P = 60^\circ \checkmark \text{ (A1)}$		
		(iv) $P + 50^\circ = 110^\circ \checkmark \text{ (M1)}$ $P + 50^\circ - 50^\circ = 110^\circ - 50^\circ$ $P = 60^\circ \checkmark \text{ (A1)}$		
(b)		(i) $K + 130^\circ = 180^\circ \checkmark$ $K + 130^\circ - 130^\circ = 180^\circ - 130^\circ$ $K = 50^\circ \checkmark$	M1	For Formati of Correc equation
		(ii) $K + 60^\circ + 70^\circ = 180^\circ \checkmark \text{ (M1)}$ $K + 130^\circ = 180^\circ$ $K + 130^\circ - 130^\circ = 180^\circ - 130^\circ$ $K = 50^\circ \checkmark \text{ (A1)}$	A1	For 50°
		(iii) $K = 50^\circ \checkmark \text{ M1 A1}$ <u>Alternate angles</u>		
		(iv) $K = 50^\circ \checkmark \text{ M1 A1}$ <u>Corresponding angles</u>		
		(v) $K + 60^\circ = 110^\circ \checkmark \text{ (M1)}$ $K + 60^\circ - 60^\circ = 110^\circ - 60^\circ$ $K = 50^\circ \checkmark \text{ (A1)}$		



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QN	10/10	L	CLASS	SOLUTION	AWARD	Comm
24(a)	L	MC	C	P.5 (i) Mass in gm.  $40 \times 250\text{g}$ $10000\text{g} \checkmark$ $1000\text{g} = 1\text{Kg}$ $1\text{g} = \frac{1}{1000} \text{Kg}$ $10000\text{g} = \frac{1}{1000} \times 10000 \text{Kg}$ $= 10 \text{Kg} \checkmark$	B1	For 10/10
					B1	For 10/10
				(ii) $1000\text{g} = 1\text{Kg}$  $\frac{250\text{g}}{1000\text{g}} \times 40 \checkmark \text{ (M1)}$ $\frac{1}{4} \times 40$ $= 10 \text{Kg} \checkmark \text{ (A1)}$		
				(iii) $1000\text{g} = 1\text{Kg}$  $250\text{g} = \frac{250}{1000} \text{Kg}$ $= \frac{1}{4} \text{Kg} \checkmark \text{ (B1)}$ $\frac{1}{4} \times 40$ $= 10 \text{Kg} \checkmark \text{ (B1)}$		
b				1 packet takes 5 days 40 packets take $5 \times 40$ days  $= 200$ days $\checkmark$	M1	For coffee in work
					A1	For 2c dc

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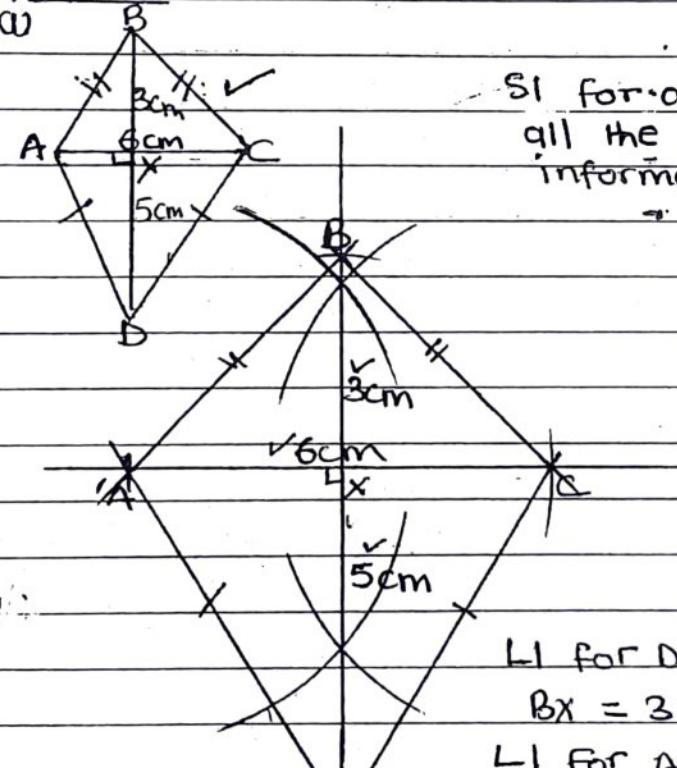
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n	TOPIC	L	CLASS	SOLUTION	AWARD	COMM
7	G.C.A	P.7		<p>(ii) 5 days need 1 packet</p> <p>1 day needs <math>(\frac{1}{5})</math> packet</p> <p>? need 100 packets</p> $100 \div \frac{1}{5}$ $400 \times \frac{5}{1} \quad \text{(M1)}$ $\underline{\underline{= 200 \text{ days}}} \quad \text{(A1)}$		

7 G.C.A P.7 Sketch



SI for a sketch with all the given information.

L1 for  $DX = 5\text{cm}$  or  $BX = 3\text{cm}$

L1 for  $AC = 6\text{cm}$

P1 For perpendicular line

J1 for a complete kite with accurate diagonals constructed.



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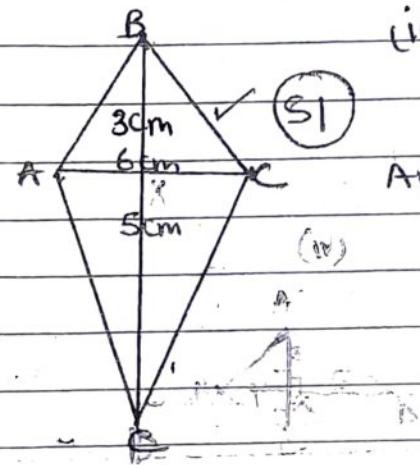
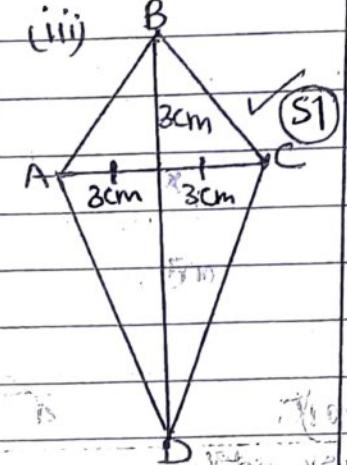
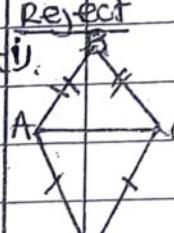
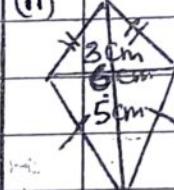
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Qn	TOPIC	L CLASS	SOLUTION	AWARD	COMMER														
			<p>(ii) </p> <p>(iii) </p>		<p>Reject</p> <p>(ii) </p> <p>(iii) </p>														
28	Algebra	A P.7	<p>i)</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td></td> <td style="text-align: center;">daughter</td> <td style="text-align: center;">Man</td> <td style="text-align: center;">sum</td> <td></td> </tr> <tr> <td>Now</td> <td style="text-align: center;"><math>n</math></td> <td style="text-align: center;"><math>4n</math></td> <td style="text-align: center;">✓</td> <td></td> </tr> <tr> <td>6 yrs ago</td> <td style="text-align: center;"><math>n-6</math></td> <td style="text-align: center;"><math>4n-6</math></td> <td style="text-align: center;">48</td> <td style="text-align: center;">B1</td> </tr> </table> <p><math>(4n-6) + (n-6) = 48 \checkmark</math></p> <p><math>4n-6+n-6 = 48</math></p> <p><math>4n+n-6-6 = 48</math></p> <p><math>5n-12 = 48</math></p> <p><math>5n-12+12 = 48+12</math></p> <p><math>\frac{5n}{5} = \frac{60}{5}</math></p> <p><math>n = 12 \checkmark</math></p>		daughter	Man	sum		Now	$n$	$4n$	✓		6 yrs ago	$n-6$	$4n-6$	48	B1	<p>For Interpretation either or the tabl- or first statement on the equation</p> <p>For format of correct equation</p>
	daughter	Man	sum																
Now	$n$	$4n$	✓																
6 yrs ago	$n-6$	$4n-6$	48	B1															

daughter	Man	sum
Now	$n$	$4n$
6 yrs ago	$n-6$	$4n-6$

$$(4n-6) + (n-6) = 48 \checkmark$$

$$4n-6+n-6 = 48$$

$$4n+n-6-6 = 48$$

$$5n-12 = 48$$

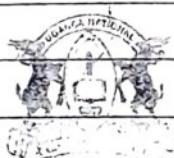
$$5n-12+12 = 48+12$$

$$\frac{5n}{5} = \frac{60}{5}$$

$$n = 12 \checkmark$$

A1 For 12

The daughter now is 12 yrs.



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In topic L and

SOLUTIONS

-28(a)

(iii)

	daughter	Man	sum
Now	$\frac{1}{4}K$	K	
6 yrs ago	$\frac{1}{4}K - 6$	$K - 6$	48

(B1)

$$\left(\frac{1}{4}K - 6\right) + (K - 6) = 48 \quad \checkmark \quad (\text{M1})$$

$$\frac{K}{4} - \frac{6}{1} + \frac{K}{1} - \frac{6}{1} = \frac{48}{1}$$

$$\frac{K}{4} - \frac{6}{1} + \frac{K}{1} - \frac{6}{1} = 48$$

$$K - 24 + 4K - 24 = 192$$

$$K + 4K - 24 - 24 = 192$$

$$5K - 48 + 48 = 192 + 48$$

$$\begin{matrix} 5K \\ 5 \\ \hline 1 \end{matrix} = \begin{matrix} 240 \\ 240 \\ 5 \end{matrix}$$

$$K = 48$$

$$\text{Daughter's age} = \frac{1}{4}K = \frac{1}{4} \times 48 = 12$$

$$= 12 \text{ yrs} \quad (\text{A1})$$

(iii) Now

Total years

Daughter and father now

$$6 + 6 = 12$$

Current total age

$$48 + 12 = 60 \text{ years} \quad \checkmark \quad (\text{B1})$$

Father	daughter	Total
4n	n	60

$$\begin{matrix} 4n + n = 60 \\ 5n = 60 \\ \hline 5 \\ 1 \end{matrix}$$

$$n = 12 \quad \checkmark \quad (\text{A1})$$

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Qn	TOPIC / CLASS	SOLUTIONS	Mark	Comments
(iv)	<u>Now</u>			
	<u>Total years</u>			
	Daughter and father now $(6+6) = 12$ years			
	<u>Current total age.</u>			
	$(48+12) = 60$ years ✓ (B1)			
	Father : daughter			
	4 : 1			
	<u>Total ratio</u>			
	$4+1 = 5$			
	<u>daughter</u>			
	$= \frac{1}{5} \times 60 \checkmark$ (M1)			
	$= 12$ yrs ✓ (A1)			
1b)	$4n = 6$			
	$4 \times n = 6$			M1 For Substitution
	$4 \times 12 = 6 \checkmark$			
	$48 = 6$			
	$42 \checkmark$			A1 For 42
29 money c p.t	E1 costs ug sh. 4400			
	E600 cost ugsh. $600 \times 4400 \checkmark$ M1 For multiplication			
	E600 cost ugsh. 2,640,000 ✓ A1 For			
	ug sh 2640,000			



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TOPIC L.C.E.TS

**SOLUTIONS**

ANSWERS

**COMMENTS**

29(b)

US \$ 1 costs ug sh. 3900 ✓

$$\begin{aligned} \text{US \$ 200 cost ug sh. } & 3900 \times 200 \text{ MI} \text{ For multiplication} \\ & = \text{ug sh. } 780000 \text{ AI For } 78000 \end{aligned}$$

Ksh 1 costs ug sh. 26 ✓

$$\begin{aligned} \text{ug.sh. } 780000 \text{ cost } & \frac{30000}{26} \text{ MI For division} \\ & = \text{Ksh. } 30000 \text{ AI For } 30000 \end{aligned}$$

30. FRACTION P.7 (ii)

In 1 day first worker digs  $\frac{1}{6}$  ✓In 1 day second worker digs  $\frac{1}{3}$  ✓In 1 day both workers dig  $\frac{1}{6} + \frac{1}{3}$ 

$$\frac{1}{6} + \frac{1}{3}$$

$$= \frac{1+2}{6}$$

$$= \frac{3}{6} \checkmark$$

BI For  $\frac{1}{6}$  or  $\frac{1}{3}$   
or  $6 \times 3$

BI For  $\frac{3}{6}, \frac{1}{2}, \frac{9}{18}$   
or  $6+3$

No. of days taken:

$$1 \div \frac{3}{6} \checkmark$$

$$1 \times \frac{6}{3} \checkmark$$

$$= 2 \text{ days} \checkmark$$

MI For division

AI For 2 days

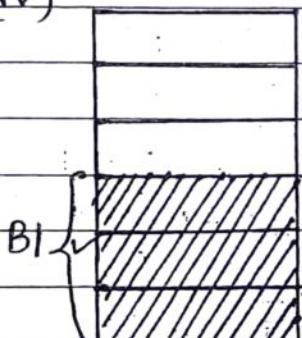
$$\begin{aligned} \text{(iii) Product} & = \frac{6 \times 3}{6+3} \text{ BI} \checkmark \text{ MI} \text{ (M1)} \\ \text{sum} & = \frac{18}{9} \end{aligned}$$

$$= 2 \text{ days} \text{ (A1)}$$

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In TOPIC	L CLASS	SOLUTIONS	AWARD	COMMENTS
(iii)		$1 \div \left(\frac{1}{6} + \frac{1}{3}\right) \text{ (B1)}$ $1 \div \left(\frac{1+2}{6}\right)$ $1 \div \frac{\frac{3}{2}}{6} \text{ (B1) M1}$ $1 \div \frac{1}{2} \text{ (M1)}$ $1 \times \frac{2}{1}$ $= 2 \text{ days } \text{ (A1)}$		
iv)		 $\frac{1}{6} \text{ or } \frac{1}{3} \text{ dug by 2nd worker in 1 day}$ $\frac{1}{6} \text{ dug by 1st worker in 1 day}$ $3 \text{ parts rep. 1 day}$ $1 \text{ part rep. } \frac{1}{3} \text{ day}$ $6 \text{ parts rep. } \frac{1}{3} \times 6 \text{ (M1)}$ $= 2 \text{ days } \text{ (A1)}$		
(b)		$(\text{Sh. } 15000) \times 2 \text{ (B1)}$ $= \text{Sh. } 60000 \text{ (M1)}$ $\text{Sh. } 15000 \times 2 = \text{Sh. } 30000 \text{ (A1)}$ $\text{Sh. } 15000 \times 2 = \text{Sh. } 30000 \text{ (A1)}$ $\text{Sh. } 30000 + \text{Sh. } 30000 \text{ (M1)}$ $\text{Sh. } 60000 \text{ (A1)}$	For correct working. For Sh. 60000	

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In Topic	Class	SOLUTIONS	AWARD	COMMENTS
(ii)	Goats	Sheep		
	$190^\circ \checkmark$	$80^\circ$	(B1)	
	$190^\circ - 80^\circ = 110^\circ \checkmark$		(B1)	
	$\frac{110}{360}$			
	11 parts rep. 11			
	1 part rep. $\frac{11}{11}$			
	36 parts rep. $\frac{11}{11} \times 36^\circ \checkmark$		(M1)	
	$= 36^\circ \checkmark$		(A1)	animals
(iii)	Goats = $3x + 40^\circ$			
	$= 3 \times 50^\circ + 40^\circ$			
	$= 150^\circ + 40^\circ$			
	$= 190^\circ \checkmark$		(B1)	
	Sheep $x + 30^\circ$			
	$50^\circ + 30^\circ$			
	$= 80^\circ$			
	$190^\circ - 80^\circ = 110^\circ \checkmark$		(B1)	
	Let the number be $y$			
	$\frac{110}{360} \times y = 11 \checkmark$		(M1)	
	$360 \times \frac{110y}{360} = 11 \times 360^\circ$			
	$110y = 11 \times 360^\circ$			
	$\frac{110y}{110} = \frac{11 \times 360^\circ}{110}$			
	$y = 36^\circ \checkmark$		(A1)	



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